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COST-EFFECTIVENESS OF ACARBOSE IN ADDITION TO EXISTING TREATMENTS IN TYPE-2 DIABETES IN GERMANY

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OBJECTIVES: Based on findings of a recent meta-analysis, evaluate long-term cost-effectiveness of acarbose given in addition to existing treatments in type-2 diabetes patients in a German setting. **METHODS:** The CORE Diabetes Model (peer-reviewed, published, validated computer simulation model) was used to project long-term clinical and cost outcomes in type-2 diabetes patients receiving acarbose or placebo in addition to their existing treatment. Transition probabilities and risk adjustments came from published sources. Treatment effects and baseline cohort characteristics were based on recently published retrospective meta-analysis of placebo-controlled, double-blind, long-term studies in type-2 diabetes, showing that acarbose treatment was associated with improvements in HbA1c, systolic blood pressure, lipid levels and BMI, and significant reduction in the risk of cardiovascular events. Direct costs were retrieved from published sources and projected over patient lifetimes from a third party health care payer perspective in Germany. Costs and clinical benefits were discounted at five percent per annum. Sensitivity analyses were performed. **RESULTS:** Acarbose treatment was associated with improvements in mean discounted life expectancy of 0.21 years (7.78 ± 0.13 versus 7.57 ± 0.13 years [mean ± standard deviation]) and quality-adjusted life expectancy of 0.19 QALYs (5.36 ± 0.09 versus 5.17 ± 0.09 QALYs). Lifetime direct costs were on average €134 per patient more expensive with acarbose than with placebo (€32,778 ± 1194 versus €32,643 ± 1285). Reduced complication costs partially offset greater treatment costs in the acarbose arm, leading to incremental cost-effectiveness ratios of €633 per life year gained and €692 per quality-adjusted life year gained. Sensitivity analysis showed that these results were robust under variation in a range of assumptions. **CONCLUSIONS:** Addition of acarbose to existing treatment was projected to lead to improvements in life expectancy and quality-adjusted life expectancy, and provide excellent value for money over patient lifetimes by current standards in the German setting.

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COST-EFFECTIVENESS ANALYSES OF BASAL-BOLUS THERAPY OF TYPE-1 DIABETES USING INSULIN DETEMIR + HUMAN SOLUBLE INSULIN VERSUS NEUTRAL PROTAMINE HAGEDORM + HUMAN SOLUBLE INSULIN REGIMENS IN GERMANY

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OBJECTIVES: A recent European-based clinical trial showed that basal/bolus treatment of 747 subjects with type-1 diabetes with insulin detemir + human soluble insulin (IDet/HSI) significantly improved HbA1c (0.11%-points lower after 26 weeks) and body weight (–0.61 kg) compared to a regimen of neutral protamine hagedorm insulin + human soluble insulin (NPH/HSI). No significant changes in hypoglycemic event rates were observed. The aim of this analysis was to estimate the long-term clinical and cost outcomes associated with IDet/HSI and NPH/HSI regimens based on German cost data. **METHODS:** A validated, peer-reviewed computer simulation model was used to project the incidence of complications, life expectancy, quality-adjusted life expectancy and costs over patient lifetimes. The model simulated the progression of diabetes and its complications (cardiovascular disease, neuropathy, renal and eye disease). Transition probabilities and risk adjustments were derived from published clinical and epidemiological studies. Baseline cohort characteristics and treatment effects were taken from the 26-week clinical study. Direct costs of diabetes complications and treatments were retrieved from published sources and accounted from a German Health care payer perspective. An annual discount rate of 3.5% was applied to costs and clinical benefits. **RESULTS:** Long-term basal/bolus therapy with IDet/HSI was projected to decrease the incidence of diabetes-related complications, improve life expectancy (0.13 life years gained) and quality-adjusted life expectancy (0.09 QALYs gained) compared to NPH/HSI. Lower complication costs in the IDet/HSI arm partially offset the increased costs of treatment. Mean total lifetime costs were €1798 per patient higher with IDet/HSI than with NPH/HSI, leading to incremental cost-effectiveness ratios of €13,831 per life year gained and €19,978 per QALY gained. **CONCLUSIONS:** Based on short-term clinical trial findings, IDet/HSI was projected to reduce the incidence of long-term complications, improve life expectancy and quality-adjusted life expectancy, and can be considered to represent good value for money by German and international standards.

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HEALTH ECONOMIC EVALUATION OF INSULIN GLARGINE FOR THE TREATMENT OF TYPE-1 AND TYPE-2 DIABETES

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OBJECTIVES: Managing diabetes within accepted limits (A1c °Ü 7%) is often complicated by the occurrence of hypoglycemia. To reduce the risk of hypoglycemia, patients and clinicians sometimes settle for sub-optimal glucose control. However, sub-optimal glycemic control increases the risk of diabetes-related complications, having important economic consequences to the health care system. Basal insulin glargine, has a distinctive A1c hypoglycemia relationship compared to NPH insulin, with reduced chance of hypoglycemia at lower A1c values. The objective is to assess the value of insulin glargine, compared to NPH insulin, in insulin treated people with Type-2 diabetes who failed to achieve an A1c °Ü 7%. **METHODS:** A 36-year time horizon state transition model simulating the natural history of diabetes and projecting clinical and economic benefits of insulin glargine compared to NPH insulin, was used. The study used Canadian costs and utilities from previous publications. UKPDS and DCCT provided the base for complication risks. The Ministry of Health perspective was taken. **RESULTS:** Considering the 36-year (lifetime) direct drug and complications costs, NPH was found to be less expensive than insulin glargine ($1559 in type-1 diabetes and $2248 in type-2 diabetes). However, since the treatment with insulin glargine substantially reduced risk of long-term complications, it produces greater life years (LY) (0.08 LY gained and 0.25 LY gained in type-1 and type-2 diabetes, respectively) and quality-adjusted life years (QALYs) (0.07 QALY gained and 0.23 QALY gained in type-1 and type-2 diabetes, respectively). When considering glargine over NPH, the incremental cost per LY gained and cost per QALY gained were $20,317 and $23,717 for type-1 diabetes, and $9131 and $9804 for type-2 diabetes. **CONCLUSIONS:** For type-2 patients, insulin glargine therapy results in substantial clinical benefits and represents an economical alternative to NPH insulin with competitive cost-effectiveness ratios.